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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
SEIFU, LESSANWORK T				
ART UNIT		PAPER NUMBER		
1797				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/588,511

Applicant(s)

SEIDEMANN ET AL.

Examiner

Lessanework Seifu

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
- Paper No(s)/Mail Date 08/04/06
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-15 are directed to an apparatus claim; however, the structure which goes to make up the apparatus has not been clearly and positively specified.
3. Claim 16 provides for the use of a reactor for preparing chlorine from hydrogen chloride by gas-phase oxidation with oxygen, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 16 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 6, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Georgian (US 2,893,851).

Regarding claims 1, 6, and 13, Georgian discloses a reactor for contacting gases and fluidized solids (see Fig. 1). Georgian discloses that the reactor comprises gas-permeable plates (perforated plates: 14, 34) and a heat exchanger (35) disposed within the reactor, wherein the perforated plates are connected in a thermally conductive manner to the heat exchanger (see Fig. 1). The recited limitation in claim 1 regarding the thermal conductivity of the gas-permeable plate being greater than the thermal conductivity of the fluidized bed has no patentable weight. The broadest reasonable interpretation of a fluidized bed is a solid-fluid mixture which behaves as a fluid. Thus, the thermal conductivity of a fluidized bed is a property which is dependent on the particular fluid and the particular solid material/catalyst selected to form the fluidized bed. The selection of the particular fluid and the solid material/catalyst to form the fluidized bed is a process limitation and not a structural or functional limitation to the apparatus claim. Process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666,667 (Bd. App. 1969) that states

"Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

6. Claims 1, 6, 7, 13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Slinko (GB 1 382 991).

Regarding claims 1, 6, 7, 13, and 16, Slinko teaches an apparatus and process for carrying out chemical reaction in a fluidized bed. Slinko teaches that the reactor for carrying out chemical reaction in a fluidized bed can comprise perforated plates or filling elements provided in the fluidized bed (see pg. 3, lines 55-78). Slinko further teaches that the perforated plates or filling elements, which have been construed as applicants' gas-permeable plates, are connected in a thermal conductive manner to a heat exchanger located in the fluidized bed (see pg. 1, lines 84-93 and pg. 3, lines 23-30). Slinko further discloses that the apparatus in accordance to his invention can be used to prepare chlorine by oxidation of HCl (see pg. 3, lines 14-15). Slinko further discloses that filling elements includes windings of wire structure stacked regularly in the fluidized bed (see pg. 2 lines 45-52 and lines 82-90). The recited limitation in claim 1 regarding the thermal conductivity of the gas-permeable plate being greater than the thermal conductivity of the fluidized bed has no patentable weight. The thermal conductivity of the fluidized bed is a property which is dependent on at least the particular fluid and the particular solid material/catalyst selected to form the fluidized bed. The selection of the particular fluid and the solid material/catalyst to form the fluidized bed is a process limitation and not a structural or functional limitation to the apparatus claim. Process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*,

164 USPQ 666,667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

7. Claims 1-3, 5, 6, 8, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Komakine (US 4,499,944).

Regarding claims 1-3, 5, 6, 8, and 9, Komakine discloses an apparatus for carrying out chemical reaction in a fluidized bed (see Abstract). Komakine discloses that the apparatus for carrying out chemical reaction in a fluidized bed comprises: a vessel (3) for containing a fluidized bed (6) (see Figs. 1 and 2); a plurality of heat transfer elements (7), which can be construed as applicants' gas-permeable plates, having openings (21) for breaking up large gas bubbles (see Fig. 3 and col. 3, lines 26-43). Komakine discloses that the heat transfer elements are connected in a thermally conductive manner to a heat exchanger (see Fig. 3 and Abstract). Komakine further discloses that the heat exchanger has tubes which run horizontally in the fluidized bed and are connected to the heat transfer elements (7). Komakine further discloses that the horizontal tubes connect vertical heat exchanger tubes of a shell-and-tube heat exchanger (see col. 3, lines 60-68 and Figs. 4 and 5). Komakine further discloses that the heat transfer tubes run through the heat transfer elements (see Fig. 3). Komakine further discloses that the reactor comprises a windbox and a perforated plate (4) for use as a gas distributor (see Fig. 1). The recited limitation in claim 1 regarding the thermal conductivity of the gas-permeable plate being greater than the thermal conductivity of the fluidized bed has no patentable weight. The thermal conductivity of the fluidized bed

is a property which is dependent on at least the particular fluid and the particular solid material/catalyst selected to form the fluidized bed. The selection of the particular fluid and the solid material/catalyst to form the fluidized bed is a process limitation and not a structural or functional limitation to the apparatus claim. Process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666,667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-9 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abekawa et al. (US 5,908,607) in view of Komakine (US 4,499,944).

Regarding claims 1-9 and 13-16, Abekawa et al. disclose a process and apparatus for producing chlorine by gas-phase oxidation of hydrogen chloride with oxygen in the presence of a heterogeneous catalyst (see col. 6, lines 60-64). Abekawa et al. disclose that the process for producing chlorine in accordance to their invention can be carried out in a fluidized bed reactor (see col. 6, lines 61-64). Abekawa et al. are, however, silent as to the specific configuration of the fluidized bed reactor.

Komakine discloses an apparatus for carrying out chemical reaction in a fluidized bed (see Abstract). Komakine discloses that the apparatus for carrying out chemical reaction in a fluidized bed comprises: a vessel (3) for containing a fluidized bed (6) (see Figs. 1 and 2); a plurality of heat transfer elements (7), which can be construed as applicants' gas-permeable plates, having openings (21) for breaking up large gas bubbles (see Fig. 3 and col. 3, lines 26-43). Komakine discloses that the heat transfer elements are connected in a thermally conductive manner to a heat exchanger (see Fig. 3 and Abstract). Komakine further discloses that the heat exchanger has tubes which run horizontally in the fluidized bed and are connected to the heat transfer elements (7).

Komakine further discloses that the horizontal tubes connect vertical heat exchanger tubes of a shell-and-tube heat exchanger (see col. 3, lines 60-68 and Figs. 4 and 5). Komakine further discloses that the heat transfer tubes run through the heat transfer elements (see Fig. 3). Komakine further discloses that the reactor comprises a windbox and a perforated plate (4) for use as a gas distributor (see Fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Abekawa et al. and Komakine, and provided a fluidized bed reactor having the features as disclosed in the reference Komakine in any suitable shape and configuration, as the fluidized bed reactor system of Abekawa et al. Because, Abekawa et al. suggests incorporating cooling means in the fluidized bed reactor system to maintain the reaction temperature within a desired range (see col. 6, line 65 to col. 7, line 2).

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the reaction surfaces that come in contact with the reactants and reaction products of Abekawa et al. with materials that are capable of withstanding corrosion such as steel, nickel alloys or ceramics, for the purpose of withstanding both the corrosive reactant material and high temperature reaction conditions.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute or include plate heat exchangers in the fluidized bed reactor of Abekawa et al. and Komakine combined, because plate shape heat

exchangers are well known heat transfer devices used in the art as an alternative to tube shaped heat elements of a heat exchanger.

12. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abekawa et al. (US 5,908,607) in view of Komakine (US 4,499,944) as applied to claim 8 above, and further in view of Erisman (US 3,708,887).

Regarding claims 10-12, the claims depend from claim 8 such that the reasoning applied to claim 8 is applied herein for the dependent portions of the claims to claim 8. The reference Abekawa et al. and Komakine are silent with respect to the gas distributor for the fluidized bed reactor comprising gas distributor nozzles and an impingement device. Erisman discloses a gas distributor plate provided with gas distributor nozzles for a fluidized bed vessel (see Abstract and col. 2, lines 1-16). Erisman discloses that the nozzles are provided with cap member for controlling the flow of a fluidizing gas (see Fig. 4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a gas distribution plate in configuration as disclosed in the reference Erisman to a fluidized bed reactor for the purpose of controlling the flow of a fluidizing gas in the fluidized bed reactor of Abekawa et al. or Komakine.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jenny (US 2,852,545) teaches an apparatus for catalytic reaction of gases in fluidized catalyst bed. Jenny discloses that apparatus in accordance to his

invention comprises perforated plates located in the fluidized bed, wherein the perforate plates are connected in a thermal conductive manner to a heat exchanger (see Fig. 1 and col. 9, lines 17-39).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lessanework Seifu whose telephone number is (571)270-3153. The examiner can normally be reached on Mon-Thr 7:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Walter D. Griffin/
Supervisory Patent Examiner,
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